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This study analyzed the key factors in understanding health care requirements for the specific patient population served. It identified the deficiencies which accompany utilization of data collected if not properly processed. As a result, the information could not always be utilized in predicting trends or needs but did attempt to compare demand and availability of services. Keywords:



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# A STUDY OF HEALTH CARE NEEDS OF THE COMMUNITY SERVED BY KIMBROUGH ARMY COMMUNITY HOSPITAL FORT MEADE, MARYLAND

A Problem Solving Project

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the

Requirements for the Degree

of

Master of Hospital Administration

By

Captain Donald C. Curry, Jr., MSC

April 24, 1981

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# CHAPTER I

## INTRODUCTION

There are several problems which exist at the Kimbrough Army Community Hospital (KACH), Fort George G. Meade, Maryland which prompted this study. The first and most important problem is the decline in workload which is being experienced. A second is space utilization which is the result of the changing patterns of practice by the Department of Medicine, the diminishing requirements for physical examinations, and the increasing importance of the occupational health function within the U. S. Army Medical Department Activity (MEDDAC). A third problem area is the ability to predict the manpower requirements needed to support the real needs of the community supported by the hospital in all beneficiary categories.

To date no attempt has been made to study the key factors which are important for understanding health care needs in the community serviced by this hospital. Although workload data is collected to meet the reporting requirements of the U. S. Army Health Services Command and to meet the requirements of the various hospital departments, it is not organized and analyzed with any regularity or rigorousness for the purpose of making long-range plans.

Additionally, data, as it is presently collected and stored, is not available nor is it organized to facilitate the evaluation of existing programs. It neither lends itself to the explanation of utilization trends nor the assessment of actual needs. Consequently, it is difficult to predict the impact of changes in hospital policy on the beneficiary population.

Additional factors have been noted. First are the numbers and types of complaints regarding waiting time to receive appointments for referral clinics. For instance, a physician in the Acute Minor Illness Clinic (AMIC) may perceive that an urgent referral is required to the Internal Medicine Clinic, yet the physician and patient may find that all appointments are filled for several weeks. Consequently, some patients never come back or they seek care elsewhere. Waiting times in some clinics such as the AMIC or Emergency Room may exceed two hours due to both misutilization by patients and availability of physicians and other types of care providers. Other clinics experience idle time periodically as demonstrated by the appointment availability versus actual appointments scheduled during a period of time.

In an effort to provide for a rational data base for the development of hospital policy and for managerial decision-making, a project was conceived to study historical workload data at the Fort Meade MEDDAC. The findings of this portion of the study will be evaluated as predictors of health care needs of the community. This work should provide the foundation for the development of a strategic plan, the formulation of MEDDAC policy, the evaluation of existing or future programs and lead to the determination of the appropriate level of services to meet the community needs.

## Background Information

Kimbrough Army Community Hospital is an acute general hospital which provides both inpatient and outpatient services to a diverse population in the Baltimore and Washington, D. C. area. The inpatient services consist of 80 operating

beds distributed between an intensive care ward, a male medical-surgical ward, a female medical-surgical ward and a combination pediatric and surgical ward. There are several surgical subspecialties. These include general, orthopedic, ophthalmologic, otolaryngologic, pediatric, gynecologic, podiatric, and urologic.

Outpatient services comprise a major component of the care provided by the hospital. Major services provided include emergency, acute minor illness, internal medicine, general surgery, orthopedic surgery, podiatry, obstetrics and gynecology, ophthalmology, otolaryngology, urology, physical therapy and occupational health. Pharmacy, laboratory and radiology services are available to both inpatients and outpatients.

As of January 1981, the estimated total population supported by the hospital based upon inputs from various sources was 193,537 persons. This number includes active duty military personnel assigned to Fort Meade and the surrounding area, retired military, dependents of both categories and civilian workforce entitled to occupational health benefits and emergency care. Specific information regarding beneficiary category is displayed in Table 1.

TABLE I

POST POPULATION SERVED[1]
FORT MEADE, MARYLAND

| Month Ending 31 January | 1975 | 1978 | 1981 |
|---|---|---|---|
| Active Duty[2] | | | |
| On Post | 9,816 | | 8,370 |
| Off Post | 3,007 | | 2,599 |
| Total Active Duty | 12,823 | 10,971 | 10,969 |
| Civilian Employees | 3,232 | 3,500[4] | 3,910 |
| Retired Military[3] | 26,290 | 42,384 | 46,786 |
| Active Duty Dependents[2] | | | |
| On Post | NotAvail | | 9,156 |
| Off Post | NotAvail | | 5,752 |
| Total Dependents | 13,627 | | 14,908 |
| Retiree Dependents[3] | 65,725 | 105,955 | 116,964 |
| Total Population Served | 121,697 | 162,810 | 193,537 |

NOTES
1. Source, DPCA, Admin. Services.
2. Reported by MILPO on records maintained (SIDPERS).
3. Reported by Retired Services, geographic area includes Maryland, Delaware, 5 counties in Virginia, several lower Pennsylvania counties.
4. Estimated.

During the period January 1979 through December 1979 a total of 14,291 bed days were accumulated. Total dispositions were 3,568 and the average length of stay was 4.0 days. During the period January 1980 through October 1980 total bed days equalled 13,447, total dispositions were 3,058 and the average length of stay was 4.4 days.

## Problem Statement

The problem is to determine the actual population supported by Kimbrough Army Community Hospital, Fort George G. Meade, Maryland, in order to predict the expected patient encounters in the ambulatory patient care program.

## Purpose of the Study

The purpose of this study was to organize the existing data bases in the various hospital functional areas for the purpose of analyzing trends that are occurring in the changing health needs of the community. In the development of the data into useful information, an attempt will be made to assess the present levels of services which are provided and compare them with community needs. Additionally, when specific phenomena cannot be explained, recommendations will be made as to the most suitable methods and techniques for obtaining further information.

## Assumptions

Several assumptions must be made in order to place reasonable limits on the study. The first assumption is that the troop population supported is constant. No major alterations will be made to the troop list for Fort George G. Meade.

A set of assumptions is related to the scope of services provided. It will be assumed that Kimbrough Army Community Hospital will emphasize the Ambulatory Patient Care (APC) Program and rely on hospitalization as a back-up service. No constraints will be imposed which will in any way reduce or preclude enhancement of existing services presently provided in the setting of an acute care general hospital, the existing ambulatory patient care program, or emergency services.

For the purpose of this study the market share of patients within the health services region will be considered constant. Use of marketing techniques to affect patient workload among competing Federal health facilities will not be used as a factor in this study.

Utilization will be assumed to be appropriate for the purposes of this study.

The evaluation of hospital and health services utilization is well beyond the scope of this paper.

Finally, with the exception of physician resources, no arbitrary constraints will be imposed in budgets, physical plant or supply costs. Physician availability cannot be overlooked since all patients must be the responsibility of a physician at any point in the system.

## Limitations

Severe limitations exist in the quality of the data base. Due to requirements of Army Regulation 340-18, all records must be disposed of either by destruction or forwarding to records holding areas and after two years, most are difficult to retrieve if at all. Additionally, during analysis, data were discovered to be missing, incomplete or incorrect. Reliability of certain aspects of data analysis is questionable.

Another limitation is the timeliness of certain information concerning demographic information derived from the census and from the Department of Defense regarding characteristics of the retired component of the constituency served by the hospital. For the most part information is at least two years old.

Some aspects of the analysis are dependent upon estimated data provided by other agencies. The numbers of dependents of retired personnel is based upon an estimator of 2.5 dependents per retired beneficiary.

Still other limiting factors are related to the mission assigned to the hospital. The fact that inpatient obstetrical and newborn services are not performed make it impossible to capture utilization data relevant to these services. The overall shortage of surgeons has had an impact on KACH and has severely limited the workload in general surgery and orthopedic surgery.

## Objectives

There are several objectives of this study. One is to determine key demographic characteristics of the population. A second is to predict the health needs of this population based on the demographic characteristics. A third is to analyze workload and utilization data for the purpose of comparing the actual experience with that which could be expected.

## Criteria

The criteria used to determine the types of service needs include planning factors relevant to inpatient care, ambulatory patient care, and emergency care. Utilization criteria will be based on historical data and a comparison with analogous health systems.

## Research Methodology

Data sources include hospital records. Clinic records were used to determine patient visits and physician availability. Records such as those prepared by the Patient Administration Division were examined to determine trends in utilization. Population data was derived from a combination of sources to include the U. S. Army Military Personnel Office, the Retired Services Office, Post Housing Division, Directorate of Industrial Operations, and the Dependent Youth Activity. Demographic information was derived from the Equal Opportunity Staff Office and the Department of Defense Actuary's Office.

Utilization information collected from various sources was analyzed using linear regression and correlation techniques to determine trends and to examine relationships of variables. All data, information and analyses were evaluated in an effort to determine whether or not the present services are representative of community

needs. Subsequent to this, techniques are proposed to refine the analysis and develop an on-going needs determination process upon which to base hospital policy, resource planning, and program evaluation.

## Review of the Literature

The major efforts of Kimbrough Army Community Hospital are directed toward ambulatory or outpatient care. This particular facet of hospital operations will be the focus of the study.

Determining needs for this aspect of care is a relatively recent and unfamiliar task in the health planning process. Many of the methods and techniques which have been tried are the same as those used for planning in hospitals and long-term care facilities. In many respects this is an ill-advised endeavor.[1] Inpatient long-term care and hospital acute care capacity is measured in patient beds and utilization is measured and projected in terms of patient days or admissions times length of stay. In ambulatory care capacity is measured in terms of numbers of physicians available or by manpower used to provide care. Utilization is measured in terms of physicians' visits as a similar term.[2] The focus of needs determination in the ambulatory care setting is at the physician or care-provider level.[3]

There are several steps to be included in the planning process for ambulatory care. First, the population to be served must be identified; the need for and prospective utilization of ambulatory care must be analyzed and projected. From this the numbers of personnel resources can be determined.[4]

The population which is served by ambulatory care resources in a given area is likely to be geographically local.[5] Distance is an important factor in the utilization of these types of services. The probability that a population will use ambulatory care

resources is stated in terms of the average number of times each member will need care in a typical year. The principle link between users of services is the probability that they will use the available resources and the estimated number of times per year each member should and will use such resources.[6] The numbers of persons who use the resources being planned and their rate of use must be estimated or measured for the given constituency. Actual behavior is used as the basis for projecting and improving future utilization.[7]

Chronic care needs require greater complexity of analysis in order to predict utilization. This is due to the fact that once an initial encounter has been made there is a need for a continuing regimen of care for as long as the patient is living. Each new incident of a chronic disease or disability is likely to generate a specific set of diagnostic and therapeutic ambulatory services. The component of chronic morbidity can be treated in like manner as the acute condition provided the incidence of new chronic conditions can be predicted. Subsequent need for care is based on appropriate annual utilization patterns for each person with the specific chronic condition.[8]

Utilization of ambulatory care services can be explained in part by the incidence of diseases and injuries which cause people to seek care. The behavior of individuals and the response to the illness behavior will also affect utilization. In any population there will be those who do not avail themselves of care when they should, while others will seek care even though they are not really in need.[9] A great many decisions which relate to utilization patterns in ambulatory care are totally under the control of the individual. In many respects these types of decisions are similar to general consumer behavior.[10] It is surprisingly difficult to discover what the individual wants when he is faced with the decision of seeking care.[11] However, it is

posited that ambulatory care patients have definite expectations regarding the delivery and quality of care they receive.[12]

In the case of chronic care health systems factors are likely to be most critical in achieving preferred chronic care utilization levels.[13] These might include changes in services provided by the health care system, in numbers of care providers available, in the attitudes of care providers toward the chronic care patient, and in practice patterns.

The utilization of ambulatory care has been a matter of major importance to researchers and policy makers for the past twenty years. Most of the research done during this period of time was directed at determining the relationship of nonmedical factors such as income level or social position to the use of services. Other studies were devised to develop complete models of utilization behavior. During the 1960s and early 1970s the effects of insurance and such programs as Medicare and Medicaid were examined. More recently attempts have been made to describe need or illness level variables which can be used to predict utilization and explain physician utilization. Economic models, social psychological models and social systems models have also been proposed.[14]

In a study conducted by Kronenfeld, the effects of variables, related to providers of care and characteristics of the delivery system. She gave particular attention to provider variables in view of greater recognition of their role in ambulatory care utilization.[15]

From the results of her study, she concluded that women use care more than men, older people use more care than younger people, and persons who report disability days or health conditions use care more than those who do not. She also reported inverse relationships between level of use and education as well as income.[16]

Of the factors she reported as contributing to determination of utilization two demographic factors were reported. These include sex and age as shown in Table 2.[17]

TABLE 2

Mean Ambulatory Care Visits

By Sex and Age

| | | Adjusted Mean |
|---|---|---|
| Sex | | |
| | Male | 2.4 |
| | Female | 2.7 |
| Age | | |
| | 0-14 | 2.8 |
| | 15-54 | 2.5 |
| | 55 + | 2.5 |

Data extracted from the National Ambulatory Medical Care Survey 1977 Summary is displayed in Table 3.[18] This illustrates the utilization of office visits of the general population and gives some insight as to what could be expected in terms of visits per year by age, color and sex. It also can be used to highlight some of the problems encountered in planning for health services since categories are subdivided differently and the results vary significantly between studies. Nonetheless, it is valuable information to be compared with the military community hospital.

TABLE 3

Number, Percent Distribution, and Annual Rate of Office Visits
By Age, Color and Sex of Patient: United States, January-December 1977

| | Percent Distribution | Number of visits per person per year |
|---|---|---|
| All visits | 100.00 | 2.7 |
| Age | | |
| Under 15 years | 18.2 | 2.0 |
| 15 - 24 years | 15.0 | 2.2 |
| 25 - 44 years | 25.7 | 2.7 |
| 45 - 64 years | 24.9 | 3.3 |
| 65 years and over | 16.2 | 4.1 |
| Color | | |
| White | 90.3 | 2.8 |
| Non White | 9.7 | 2.0 |
| Sex | | |
| Female | 60.5 | 3.2 |
| Male | 39.5 | 2.2 |

The use of health services by civilian beneficiaries of the military health care system was examined in 1973 in a study conducted by the Office of Management and Budget. Utilization by civilian beneficiaries was compared with utilization by members of the Kaiser-Permanente Plan in Northern California and the non-institutionalized population of the United States. The results of this study demonstrated that ambulatory visit rates of 3.99 visits per person per year for beneficiaries in Northern California to all types of providers closely approximated those of the Kaiser-Permanente system when all sources of care (within and outside of the system) are considered.[19] Use of services outside the military system as is permitted by the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) reduced utilization within the system. The study also concluded that civilian beneficiaries of the Military Health Care System were not fully utilizing their entitlements to health care.[20]

The Walter Reed Army Institute is conducting a study of ambulatory care at Kimbrough Army Community Hospital. Preliminary results of this study have revealed that the average number of visits per person per year for active duty personnel assigned to Fort George G. Meade is 7.5 visits. This figure does not include routine physical examinations.[21]

A particular clarification is in order for understanding the development of the study. This is the distinction between demand for health services and the need for health services. A need in this context is a perceived or medically defined state of illness. It is a specific condition that limits a person as an individual or a family member in meeting his full potential.[22] When this need is perceived to be severe enough that the individual seeks some form of professional assistance, the need is then defined as a demand.[23] The relationship between need and demand is at the heart of the planning process in the health care field.[24]

## FOOTNOTES

[1]Robin E. MacStravic, Determining Health Needs (Ann Arbor, Michigan: Health Administration Press, 1978) p. 233.

[2]Ibid.

[3]Ibid.

[4]Ibid.

[5]Ibid., p. 234.

[6]Ibid., p. 234.

[7]Ibid., p. 235.

[8]Ibid., p. 240.

[9]Ibid., p. 239.

[10]Anthony R. Kovner and Helen L. Smits, "Point of View: Expectations of Ambulatory Care", Health Care Management Review 3 (Winter 1978): 69.

[11]Ibid.

[12]Ibid., p. 70.

[13]MacStravic, p. 241.

[14]Jennie J. Kronenfeld, "Sources of Ambulatory Care and Utilization Models," Health Services Research 15 (Spring 1980): 3.

[15]Ibid., p. 4.

[16]Ibid., p. 10.

[17]Ibid., p. 13.

[18]U. S., National Center for Health Statistics, Division of Health Resources Utilization Statistics, "The National Ambulatory Medical Care Survey, 1977 Summary," p. 17.

[19]Robert M. Thorner, "The Use of Health Services by Civilian Beneficiaries of the Military Health Care System: A Comparative Study," Medical Care 4 (April 1978): 287.

[20]Ibid., p. 267.

[21]Darlene Vernon, "The Frequent Patient," unpublished manuscript.

[22]Allen D. Spiegel and Herbert Harvey Hyman, Basic Health Planning Methods (Germantown, MD: Aspen Systems Corporation, 1978) p. 27.

[23]Ibid.

[24]Ibid.

## CHAPTER II

## DISCUSSION

Health service regions are established by Health Services Command Regulation 40-21, dated 23 June 1980. Regions are further subdivided into Health Service Areas as shown in Figure 1. Within the Walter Reed Army Health Service Region there are numerous Federal medical facilities in close proximity to each other. The same is true in the Fort Meade Health Service Area. Presently there are no regulations to govern the use of any particular facility by any constituency provided that those patients seeking care qualify as beneficiaries to receive care at a facility.

The first step in the analysis was to attempt to define the beneficiary population which would most likely seek care at the Fort Meade Medical Department Activity. The active duty and dependent populations for personnel assigned to Fort Meade can be determined with reasonable precision. However, the determination of the numbers of retired personnel and their dependents poses considerable problems. Since these groups account for a large amount of workload in ambulatory care, it is important to be able to estimate the number of persons most likely to seek care at the hospital.

In order to determine geographical areas where these persons were likely to be living, zip code listings provided by the Office of the Actuary, Defense Manpower Data Center were used.[1] Assuming that the checks were mailed to an address which was an actual domicile or a banking or savings institution near the beneficiary's residence, a partial description of population densities could be made.

In the geographic area in close approximation to Fort Meade the greatest number of checks were mailed to the Baltimore, Columbia, and Annapolis, Maryland areas. These accounted for approximately 8000 checks. Using the planning factor of 2.5 dependents per retired person, a factor used by the National Association for

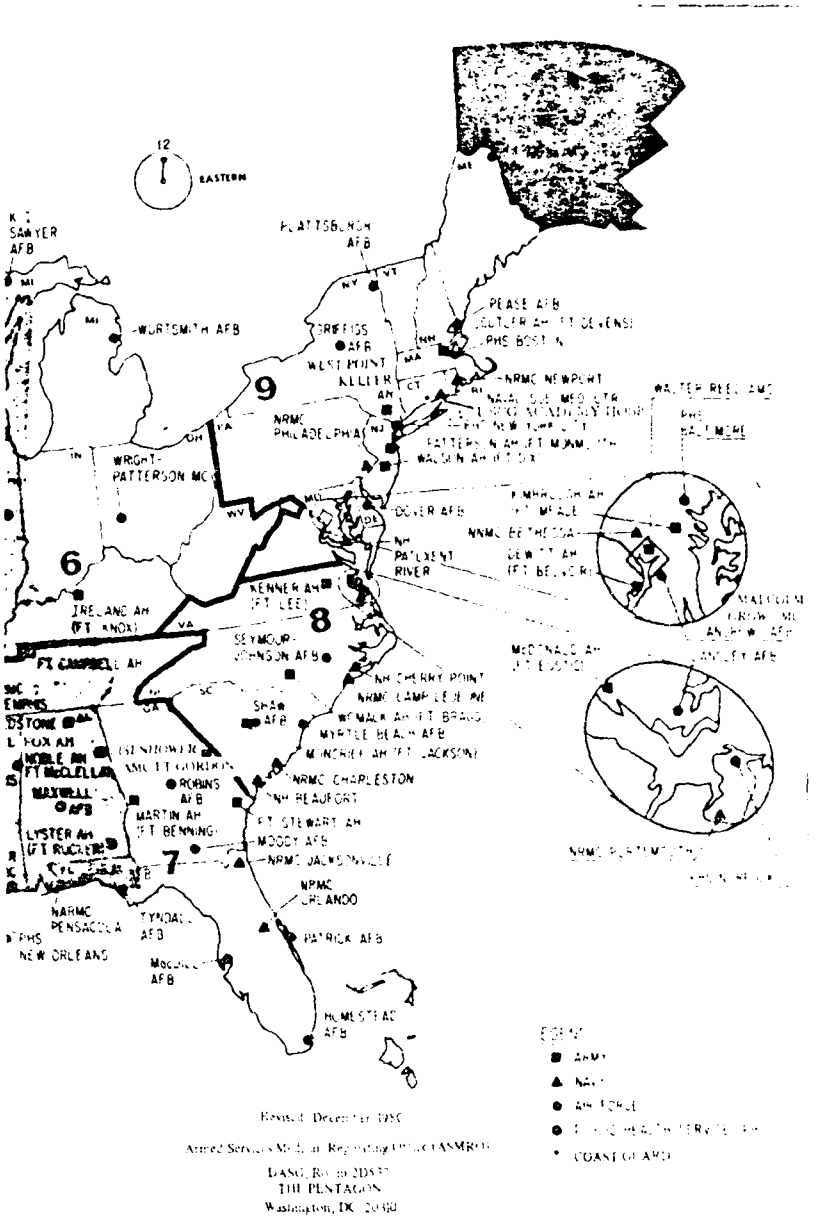


Fig. 1. Map of the Walter Reed Health Service Region and the Fort Meade MEDDAC Health Service Area.

Uniformed Services, the number of dependents is estimated at 20,000 persons. The total retired and dependent population is therefore approximately 28,000 persons.

Two counties in close proximity to Fort Meade are assigned to the Walter Reed Health Service Area. Approximately 10,000 checks are mailed to these counties. Sixty-four hundred (6,400) checks are mailed to zip code areas immediately adjacent to the installation. Assuming these persons would choose to seek care at Fort Meade which is within 15 minutes driving distance, it was estimated that approximately 6,400 retired personnel and 16,000 dependents could be expected to seek care. The total persons is 22,400. When this is added to the previous estimate of 28,000 persons, a total of 50,400 persons could be expected to use the medical facilities at Fort Meade.

A portion of Northen Virginia is included in the health services area. Interestingly, 30,255 checks are mailed to recipients in the Northern Virginia region, a portion of which are mailed to persons who should receive care at KACH. The actual proportion is indeterminable from available published data, but it is not likely that this group of beneficiaries would bypass Walter Reed Army Medical Center in order to use the ambulatory care services at KACH.

Approximately 3,700 checks are mailed to the State of Delaware and 1,100 checks are sent to Maryland Eastern Shore. In order for persons to travel to KACH they must cross the Chesapeake Bay. It is more likely that they would use the Public Health Service Hospital or Veterans Administration Hospital in Baltimore or the Air Force Hospital at Dover Air Force Base.

Other major concentrations include Southeastern Pennsylvania (4,700 checks) and the Philadelphia, Pennsylvania area (8,800 checks). Population centers in these other areas are outside the 40 mile limit of KACH. These persons are entitled to

care at Pennsylvania clinics such as the Dunham U.S. Army Health Clinic or CHAMPUS benefits. Additionally, there is a Naval Regional Medical Center located in Philadelphia.

In the absence of known demographic and utilization data concerning the non-active duty beneficiary population, two estimators were used to develop a range of expected visits. The national average number of visits was used to estimate a minimum value. The estimator is 2.7 visits per person per year which was calculated in the National Ambulatory Care Survey 1977 Summary.[2] To refine this estimate according to appropriate demographic category is impossible at this time due to the lack of any detailed information. A second estimator of 3.99 visits per person per year derived from the Office of Management and Budget study in Northern California was used to estimate the upper limit.[3] The active duty utilization rate has been calculated at 7.5 visits per person per year.

In calculating the range of expected visits, the active duty population can be expected to utilize 75,000 visits. The non-active duty population plus dependents numbering an estimated 50,400 persons and the 14,000 active duty dependents total 64,400. The expected range of visits for these persons is between 173,880 and 256,956 visits per year. The overall range is 248,880 and 331,956 visits per year.

The actual number of visits experienced during calendar year 1980 was 258,004. While this value is within the predicted range of visits, no valid conclusions can be drawn without additional information about the population seeking care. A variation between an estimate and the actual number of visits could be attributed to a number of factors. There are a number of Federal facilities in the area yet there is no way to predict the proclivity of patients to select one facility over another. The aggregate estimates of utilization does not enable the study of patterns of use of specific demographic elements of the population which may deviate drastically from those

determined by various studies. Also, there is no firm evidence to prove that the estimated non-active duty beneficiary population is correct until an extensive patient-origin study and a series of consumer surveys can be completed to determine the actual population which uses the services of the hospital and to predict the potential population which could avail themselves of the facility. A final consideration is that the estimated figures are based upon information derived from different periods of time. The practice of ambulatory medicine and the reactions of patients has evolved significantly over the years.

Table 4 provides information regarding major clinics of the hospital. Average monthly clinic visits were calculated for each in selected years. The 1978 figures are unexpectedly high due to the flu outbreak of December 1978. The figures for the emergency room and the Acute Minor Illness Clinic are very similar, which seems to indicate that there is mis-utilization of the emergency room. Also, through September 1980, contract pediatricians were on duty in the emergency room after duty hours. Pediatrics workload is included in the totals.

Table 4

Average Monthly Clinic Visits[1] by Clinic by Calendar Year for Selected Clinics

| | 1977[2] | 1978 | 1979 | 1980 |
|---|---|---|---|---|
| Internal Medicine | 1535.4 | 1704.7 | 2015.5 | 2335.4 |
| General Surgery | 466.8 | 482.4 | 485.2 | 502.6 |
| Acute Minor Illness | 2861.3 | 3066.2 | 2866.5 | 3040.4 |
| Emergency Room | 3293.2 | 3029.8 | 3098.2 | 3058.5 |
| Pediatrics | 1995.6 | 1810.0 | 1970.8 | 2316.4 |
| Obstetrics | 626.7 | 585.1 | 578.67 | 589.6 |
| Gynecology | 1391.6 | 1468.6 | 1505.0 | 1487.4 |
| Total All Hospital Clinics | 18,925.0 | 20,553.8 | 20,384.8 | 21,500.3 |

Notes:

1. Source of data: Medical Summary Report (RCS: MED 302).
2. Records are incomplete for 1977. Values calculated based on 10 months.

Table 5 displays the percentages of total visits by calendar year. Obstetrics and gynecology were grouped as they are in national surveys. These numbers demonstrate that the distribution of patients remains fairly constant.

Table 5

Percentage of Total Visits to Selected Clinics[1] by Calendar Year

| | 1977[2] | 1978 | 1979 | 1980 |
|---|---|---|---|---|
| Internal Medicine | 8.1 | 8.3 | 9.9 | 10.9 |
| General Surgery | 2.5 | 2.4 | 2.4 | 2.3 |
| Acute Minor Illness | 15.1 | 14.9 | 14.1 | 14.1 |
| Emergency Room | 17.4 | 14.7 | 15.2 | 14.2 |
| Pediatrics | 10.5 | 8.8 | 9.7 | 10.8 |
| Obstetrics and Gynecology | 10.7 | 10.0 | 10.2 | 9.9 |
| Total Selected Clinics | 64.3 | 59.1 | 61.5 | 62.0 |

Notes:

1. Source of data: Medical Summary Report (RCS: MED 302).
2. Records are incomplete for 1977. Values calculated based on 10 months.

Total clinic visits were examined for the three years, 1978, 1979, and 1980. Based on the results of grouping of data, only modest seasonal trends could be demonstrated. The variation in visits from month to month is very erratic. However, when clinic visits are averaged by calendar year, there is a general increase in visits when the December 1978 flu season is taken into consideration.

Major clinics were studied for a five year period beginning in 1976. Attempts to index monthly clinic visits and to analyze for any trends using chi-squared techniques proved futile. There is no way to predict with any certainty the anticipated workload for a specific clinic.

Availability of appointments was compared with appointments actually made for each of the major clinics. Percentage of appointments filled was nearly 100 percent in all cases. However, visits based on appointments accounted for only a portion of the total clinic visits. This was due to the fact that some clinics accept walk-in patients and some schedule a few appointments independently. No clinic could demonstrate a long waiting list of patients. This could be the result of patients electing to visit another facility when they know or suspect that a service is unavailable.

An attempt was made to draw a correlation between manhours of physician time expended versus the total number of visits experienced. The only clinic where any relationships existed based upon linear regression and correlation techniques was the Internal Medicine Clinic. The coefficients were $a = 10.45$, $b = 1.30$ and $r^2 = .71$. This may be explained in part by the fact that this clinic is very regimented to an appointment system, which is based upon time required to care for patients. In other clinics, the relationship between physician time and patients seen cannot be explained.

Physician productivity was not addressed in this study because each assigned

physician has different responsibilities, sees different types of patients, and performs different procedures. Each has always been assumed to be working at maximum efficiency. This again is borne out by the fact that no long waiting lists existed.

The emergency room, the Acute Minor Illness Clinic, and the Pediatric Clinic are the entry points to a health care system. Utilization behavior in these clinics is determined largely by the patients (or parents) individually. Once a patient is in the health care system of the hospital, utilization becomes dependent primarily upon physician-determined variables. The dynamics of these were not studied.

During the proposed preparation for this project it was noted that morbidity is a factor that should be taken into consideration in determining health needs. However, in discussion with care providers at the hospital, it was concluded that morbidity plays a very small role in the patterns of utilization of care. Actual patterns are felt to be established by the providers themselves through their practice characteristics. Providers accumulate those particular patients who have conditions which are of interest to them. These patients' utilization behavior usually becomes a matter for the physician to determine.

The number of military medical treatment facilities in the area becomes a factor in utilization behavior. Patients choose hospitals based upon their perception of the seriousness of their condition and the convenience with which they can get through the particular health care system. For instance, patients who live and work in the Walter Reed Medical Service Area may enter the KACH system for acute illness, dressing changes, refills of medications, each of which is recorded as a patient visit if it is convenient. Under differing circumstances staff members of KACH freely admit that when they or members of their own families feel seriously ill or need special care, they will travel to another health care facility in the region. This

is an insoluable problem at the MEDDAC level but it is an area worth studying for future planning for health services.

The most evident finding of this study rests on the distinction between the demand for health services and the need for health services. The system is well-equipped to capture demand-related information and can be used to study the impact of disease and injury retrospectively. It has been consistently demonstrated that in the case of the Fort Meade MEDDAC, it is extremely difficult to predict accurately specific demand-related requirements. Until patient-origin data can be developed and some form of enrollment can be accomplished, it will be impossible to predict needs.

## FOOTNOTES

[1]U.S., Department of Defense, Office of Actuary, Defense Manpower Data Center, "DoD Statistical Report on the Military Retirement System," 1979.

[2]U.S., National Center for Health Statistics, Division of Health Resources Utilization Statistics," The National Ambulatory Medical Care Survey, 1977 Summary," p. 25.

[3]Robert M. Thorner, "The Use of Health Services by Beneficiaries of the Military Health Care System: A Comparative Study," Medical Care 4 (April 1978): 285.

## CHAPTER III

## CONCLUSIONS AND RECOMMENDATIONS

The actual population served by Kimbrough Army Community Hospital, Fort George G. Meade, Maryland, is estimated to be approximately 64,400 persons. This is considerably fewer than an estimate of 193,537 which was derived from installation community services records. The disparity is due to the fact that the new estimate is based on actual demand for medical care and the resultant patterns of utilization which exist.

In order to determine the appropriate services required to support the health care needs of the area served by the U.S. Army MEDDAC, Ft. George G. Meade, Maryland, there must be a thorough understanding of the variables which will affect utilization of services. This is particularly important because services can only be determined on the basis of who will be most likely to use the services.

The choices to use services are related to the concepts of need and demand. As has been previously stated a need is a perceived or medically defined state of illness. It is a specific condition which limits a person as an individual or a family member in meeting his/her full potential. The need is defined as a demand when it is perceived as being severe enough that the individual seeks some form of professional assistance. The information gathering systems at the MEDDAC are attuned to collection and display of demand-related information but are inadequate for the generation of need-related information.

The diversity of the existing regional medical treatment facilities cannot be overlooked. Unless they are taken into consideration, the needs of the community will be vastly overstated regarding the hospital at Ft. Meade. When they are taken into account, characteristics of these facilities naturally impact on utilization

variables and vice versa. Further indepth study at the regional level could lead to greater insight.

There is a paucity of information which explains the assessment of needs for ambulatory care services. Mac Stravic provides an overview of available techniques for determining the constituency, utilization behavior and resource determination. However, utilization patterns in reality will probably evolve based upon the practices established by the providers of care, the utilization behavior on the part of patients, and systems variables such as convenience (short travel distances and short waiting times).

Utilization data measured in visits to clinics was collected and analyzed to determine if any trends had developed since the 1977 time period. In general, visits compared monthly varied widely. When examined as a whole, only modest seasonal trends could be discerned and great variability existed within seasonal divisions. There was a trend of increasing total visits which could be attributable to better reporting, different reporting categories (such as recording phone calls), an increase in the population served, or an increase in rates of utilization expressed in visits per person per encounter period studied. In the absence of a sophisticated utilization study, no complete explanation can be made.

Several assumptions were refined concerning the actual population served by the hospital based upon the analysis of residences of the military and non-military beneficiary populations. The estimated numbers of persons most likely to use care are considerably less than those formerly accepted. Again, a utilization study is required to improve these estimates.

At the present time there is very little information available to explain the decision behaviors of patients to select any particular facility. Only assumptions can be made regarding such behaviors until such time as a thorough utilization study can

be conducted. The type of study which could be performed should produce patient-origin data by health service area and demographic characteristics of the patient population to be served. These are vital information sets if needs are to be determined. Such a study will be greatly facilitated with the implementation of the Defense Eligibility/Enrollment Reporting System (DEERS).

In addition to a recommendation that a utilization study be performed, an additional recommendation that patient surveys be conducted with the broad intents of analyzing decision behaviors and perceptions of patients needs. These projects would have a wider applicability to other U. S. Army Medical Department health service regions for the development of policy and for health planning in general.

The actual patterns of utilization of services by individuals in the health care system is unknown. This study facilitates the study of and prediction of the demands of the community served by Kimbrough Army Community Hospital based upon existing measurements and retrospective analysis.

Based upon the existing demand information, an analysis of the appointments system, a modestly increasing annual workload, and no constantly demonstrable backlog of patients, the level of services are appropriate at the present time. To address the question of meeting needs of the community, a great deal more study is required.

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